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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,924	02/23/2004	Hirotsuna Miura	118763	7531

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EXAMINER	
HEINRICH, SAMUEL M	
ART UNIT	PAPER NUMBER
3742	

MAIL DATE	DELIVERY MODE
07/21/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,924	MIURA ET AL.	
	Examiner	Art Unit	
	Samuel M. Heinrich	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-62,66-72 and 75* is/are pending in the application.

4a) Of the above claim(s) *75* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-62 and 66-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claim 75 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claim 75 pertains to discharging plural droplets and irradiating the plurality of droplets.

Claims 60-62 and 66-72 pertain to irradiating a first droplet with a first laser beam and irradiating a second droplet with a second laser beam and subsequently sintering.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 75 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 60-62 and 66-72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 60, “disposing a first droplet … irradiating the first droplet with a first laser beam” and “disposing a second droplet … irradiating the second droplet

with a second laser beam" is not clearly described in the original disclosure. Where in the specification are these features disclosed?

Claim 60, line 10, "being separated to the first" is not idiomatic language.

Claim 60, lines 26 and 27, "sintering … with a light" is not clearly described in the original disclosure. Where in the specification are these features disclosed?

Claims 61, 62, and 66-70 contain the unclear description of Claim 60.

Claim 71, "disposing a first droplet … disposing a second droplet … irradiating the first droplet with a first laser … irradiating the second droplet with a second laser" is not clearly described in the original disclosure. Where in the specification are these features disclosed?

Claim 71, lines 18 and 19, "sintering … with a light" is not clearly described in the original disclosure. Where in the specification are these features disclosed?

Claim 72 contains the unclear description of Claim 71.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 60-62 and 66-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of USPN 6,531,191 to Notenboom in view of EP0930641A2 in view of USPN 5,316,80 to Noakes et al in view of USPN 3,710,072 to Shrader et al.

AAPA describes (Specification Description of the Related Art, pp. 1 and 2, Figures 25 and 26) well known droplet deposition and laser treatment. AAPA describes (Description of the Related Art) droplets which are naturally dried and then heated and describes drying of droplets with an IR lamp.

Notenboom describes (column 3, lines 40-57) laser evaporation means for obtaining a thin layer or particles wherein the liquid is evaporated, and describes subsequent laser sintering of the particles "by means of a more powerful laser". Notenboom shows (Figures 1f and 1g) a first layer of adjacent coating spots 7 and 9 and a second layer coating spot 10 which overlaps both spots 7 and 9.

EP0930641A2 describes ([0118]-[0120] and Figure 13) deposition of droplets and subsequent deposition of fluid "on the areas devoid of the previously

deposited fluid". EP0930641A2 shows (e.g., Figure 13) first and second inkjet heads.

Noakes et al describe (column 17, lines 6-16) "deposit the ligaments/droplets in an interleaved fashion" wherein they are "interleaved and fill the gaps ".

Shrader et a describe (column 6, lines 63-67) the use of a diffuse beam and the use of a narrow beam, and the use of a wide beam for evaporation in a method of manufacturing a wiring substrate would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because the wide beam provides efficient evaporation of certain materials.

The instant claimed droplet spacing would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because the non-contacting droplets provide a smaller conductive line.

Diffraction optical elements and reflectors are well known beam focus and beam direction means and the use thereof would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art for directing a beam to a substrate.

The instant claimed fourth and fifth droplet application would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art as being duplicate steps in a further build-up process.

Note that it would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art that following heating, drying, or

laser evaporation, any remaining or trapped solvent would be gasified in the sintering steps described in AAPA or Notenboom.

Response to Arguments

Applicant's arguments filed April 22, 2008 have been fully considered but they are not persuasive.

Applicant argues the prior art does not describe disposing a first droplet and irradiating the first droplet with a first laser beam and disposing a second droplet and irradiating the second droplet with a second laser beam. This argument is not convincing. These features are not clearly supported in the original disclosure. Are the first and second beams from different laser beam sources or is it an on/off/on method of operation of one laser beam source?

Applicant argues that the prior art does not describe a first semiconductor laser attached to a first inkjet head and a second semiconductor laser attached to a second inkjet head. This argument is not convincing. The use of plural heads would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art in order to speed production.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art pertains to droplet coating and subsequent heating.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel M. Heinrich whose telephone number is 571-272-1175. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Samuel M Heinrich/
Primary Examiner, Art Unit 3742